

Section 2

Alternatives

Alternatives

This section will discuss the alternatives investigated to address the project's purpose and need. A full range of alternatives was developed, including a broad array of roadway improvement and multimodal improvement strategies. The project history, alternatives development process, alternatives retained for detailed evaluation, alternatives considered but not recommended for further evaluation, and alternatives evaluation findings are discussed below.

2.1 Alternatives Development Process

A broad array of alternatives was considered to address the transportation needs and objectives defined in the purpose and need for the I-74 corridor study. These included both roadway and multimodal improvement strategies. Alternative improvements were considered for the I-74 mainline and six service interchanges between 23rd Avenue in Illinois (south project terminus) and 53rd Street in Iowa (north project terminus), a distance of 7.4 miles. Near the Mississippi River, the project corridor boundary extended about 1,000 feet to the east and west of the existing I-74 roadway. This allowed consideration of a broad range of location options for an improved I-74 river crossing. The project corridor boundaries are shown on [Figure 1-1, I-74 Iowa-Illinois Corridor Study Map](#), at the end of [Section 1, Purpose of and Need for Action](#).

The alternatives developed for the I-74 corridor study are based on recommendations contained in the MIS (December 1998) and the 2025 RTP (March 2001). These recommendations include highway capacity improvements such as widening of the I-74 corridor, construction of an improved I-74 river crossing, transit service improvements, expansion of multiuse trail systems, and transportation system strategies.

Alternatives were developed to address identified design, traffic and safety needs in the corridor, to meet established planning and design criteria and standards, to avoid or minimize impacts to environmental resources, and to sustain economic development opportunities along the I-74 corridor. Given the differing nature of improvement requirements through the corridor, the study area was divided into three separate analysis sections; the South Section (from 23rd Avenue to 12th Avenue), the Central Section (from 12th Avenue in Illinois to Lincoln Road in Iowa), and the North Section (from Lincoln Road to north of 53rd Street). Early identification of environmental and community constraints was used to develop location alternatives that would avoid or minimize environmental impacts. A geographic information system (GIS) -based database was assembled to allow efficient evaluation of potential environmental impacts of multiple alternatives. Public, agency, and I-74 Project Advisory Committee input was encouraged and considered throughout the process. The alternatives development process is briefly described below.

2.1.1 Step 1: Establish Engineering Requirements

Initially, the basic engineering requirements were established. These requirements were developed to address safety and capacity concerns, to meet the purpose and need, and to satisfy federal and state policies. The requirements provided the basis for establishing the proposed corridor sizing and general design features of the alternatives (see [Section 2.2, *Range of Alternatives Considered*](#), for details).

2.1.2 Step 2: Develop and Evaluate Concept Alternatives

Roadway and multimodal improvements were developed and tested at a conceptual level. The objective of this step was to test a full range of possible alternatives and to identify reasonable and representative proposed alternatives for more detailed consideration (see [Section 2.2, *Range of Alternatives Considered*](#), for details).

Roadway improvements were developed and tested by first investigating improvement options near the Mississippi River and at service interchanges within the project limits. Options considered included both retaining and reusing the existing I-74 Mississippi River bridges as well as constructing a new bridge(s) on new alignment. For the new bridge option, a broad range of locations was considered for a new alignment near the existing I-74 Mississippi River bridges. Similarly, a broad range of interchange location and design options was considered along the corridor. This allowed identification and elimination of options that are not reasonable because they could not meet engineering standards or would result in disproportionate impacts. Evaluation results, regulatory/resource agency comments, and public input, including comments received from the July 2001 public information meetings, were considered in selecting representative and reasonable alternatives to carry forward.

Multimodal improvements were considered both independently and in combination with potential roadway improvements. This analysis served to establish the ability of each modal option to stand alone as a possible solution to addressing the needs along the I-74 corridor or serve to enhance the travel performance of the proposed roadway alternatives.

2.1.3 Step 3: Develop and Evaluate Build Alternatives

Build alternatives were carried forward from the range of identified reasonable and representative alternatives. Build alternatives carried forward to be studied in detail included three alignment alternatives near the existing I-74 Mississippi River bridges (“C” Alignment Alternative, “E” Alignment Alternative, and “F” Alignment Alternative) ([Figures 2-1a and 2-1b, *Mississippi River Crossing Location Options*](#), at the end of Section 2). However, it was subsequently determined the “C” Alignment Alternative is unreasonable due to concerns with constructability and potential impacts. Specifically, it would not be practical to construct the “C” Alignment Alternative while maintaining traffic along I-74. Also, the “C” Alignment Alternative would have greater potential environmental and socioeconomic impacts than the remaining build alternatives. Therefore, two alignment alternatives were carried forward with the build alternatives (“E” Alignment Alternative and “F” Alignment Alternative). Build alternatives share many common features, but are distinguished by different Mississippi River crossing locations and differing design treatments (design variations) at interchanges and local roadways. Additional engineering detail was developed to provide guidance on design efforts, to establish preliminary project

cost estimates, and to allow consideration of potential environmental impacts for all possible improvement combinations within the Draft EIS. Multimodal improvements were included in the build alternatives, e.g., transit accommodations, bicycle/pedestrian accommodations, and transportation system management features (see [Section 2.3, *Alternatives Retained for Detailed Evaluation*](#), for details).

2.1.4 Step 4: Identify Preferred Alternative

The preferred alternative will be identified after public comments on the Draft EIS and the public hearing have been fully evaluated. It will be based on engineering and environmental analysis findings, regulatory/resource agency input, and public comment. This will include a preferred river crossing alignment and preferred design treatments for individual interchanges and local roadway sections. A preferred alternative will be identified and discussed in the Final EIS.

2.2 Range of Alternatives Considered

This section includes a discussion of engineering requirements established for the project, as well as improvement options considered but not recommended for further evaluation through the concept alternatives development process. A variety of roadway and multimodal improvements were developed and tested at a conceptual level to allow identification of a complete set of reasonable and representative build alternatives for more detailed consideration. This included reuse options for the existing Mississippi River bridges, multiple location and lane configuration options for a new Mississippi River crossing, interchange location and design options, and multimodal improvements.

Concept alternatives were developed via an iterative and interactive process, which included workshops with the Iowa and Illinois DOTs, the FHWA, and local agency staff, and small group meetings with the public. Concept alternatives were developed to a level of detail that permitted an assessment of whether the improvements would address purpose and need, comply with engineering requirements, or result in disproportionate environmental or socioeconomic impacts. The alternatives were evaluated using a combination of qualitative and quantitative measures aimed at assessing transportation benefits, potential environmental and socioeconomic impacts, and financial issues. The process was structured to encourage input from the FHWA, the Iowa and Illinois DOTs, regulatory/resource agencies, the I-74 Project Advisory Committee, area officials, and the public. Improvement options that could not meet engineering requirements or resulted in disproportionate impacts were not recommended for further consideration.

A discussion of engineering requirements and improvement options considered but not recommended for further consideration follows.

2.2.1 Engineering Requirements

Alternatives were developed to address the project purpose and need and to comply with basic planning and design requirements established at the outset of the project. Sound planning requires that major infrastructure improvements provide a functionally and operationally acceptable facility for a reasonable design period. Highway improvements are typically designed for a 20-year design life from time of construction. However, use of a

longer design life is prudent in the case of a major river crossing improvement due to the fact that future expansion opportunities are often constrained by the physical characteristics of the river crossing bridge, inability to effectively handle traffic during construction, and economics.

Given the nature of proposed improvements along I-74 and the uncertain project construction schedule, significant consideration was given to assessing possible future traffic demand along the corridor. The 2025 RTP and associated regional socioeconomic and travel demand forecasts served as the basis for developing build alternative requirements. Subsequently, forecasted traffic growth trends were extrapolated beyond the current 2025 regional planning horizon to establish potential long-term traffic volume levels for the I-74 river crossing. Recognizing that the 2025 RTP proposes construction of a new Mississippi River crossing (Bettendorf-East Moline Bridge) between the cities of Bettendorf and East Moline (about 3 miles upstream from I-74), a traffic sensitivity analysis was also conducted to assess the range of future I-74 traffic demand under various forecast scenarios. Traffic forecasts along I-74 were evaluated both with and without construction of the planned Bettendorf-East Moline Bridge, as well as with traffic growth rates in the 2025 RTP versus historic traffic growth rates. The sensitivity analyses revealed that traffic demand on the I-74 bridges would increase by approximately an additional 10 percent (over the current 2025 forecast of 78,000 VPD) if the Bettendorf-East Moline Bridge were not constructed. Further, current regional forecasts for traffic growth on the I-74 river crossing are substantially less than the historic trend. Should future traffic growth follow the historic trend, demand could be up to 20 percent greater than the current 2025 forecast.

Following a detailed analysis of future traffic characteristics along I-74, the following planning and design requirements were established to guide the development and comparative evaluation of the alternatives.

Design Year and LOS

The current long-range plan forecast year (2025) will serve as the nominal design year. The proposed design year may be adjusted in the future if long-range plan updates become available or when the project construction timeframe is better defined. The target performance level for reconstructed interstate corridors in congested urban environments should be, at a minimum, LOS C for the projected design year traffic load, to the extent feasible within the constraints of economic costs, community compatibility, and environmental sensitivities. LOS is a qualitative measure, ranging from the most acceptable (LOS A) to breakdown conditions (LOS F), describing the quality of traffic flow, operational conditions, and motorists perception of these conditions. See [Section 1.4.1, *Traffic Demand and Service*](#), for a more detailed description of LOS.

Proposed Corridor Sizing

Based on current design standards and 2025 RTP traffic forecast data, the proposed cross section along I-74 would provide three 12-foot lanes in each direction from 23rd Avenue in Illinois to U.S. 6 (Spruce Hills Road) in Iowa, with additional auxiliary lanes between high volume interchanges. The existing two 12-foot lanes in each direction will be retained north of U.S. 6. The proposed corridor sizing is displayed on [Figure 2-2, *Proposed Mainline I-74 Corridor Sizing*](#), at the end of Section 2. It should be noted that a final decision regarding the

proposed corridor sizing has not been made at this stage of project development. Rather, the proposed corridor sizing was used as the basis of analysis of potential environmental consequences. Proposed cross sections for the build alternatives are shown on [Figure 2-3, Typical Proposed Cross Section](#), at the end of Section 2.

Design Criteria

Project specific design criteria were established on the basis of federal and state (Iowa and Illinois) design standards and policies. Design criteria were developed for design speed, horizontal and vertical geometry, and roadway cross sections (mainline, ramp, and local roadway).

Maintenance of Traffic During Construction

Build alternatives must maintain two lanes of traffic in each direction across the Mississippi River during construction. This requirement was established given the regional significance of the I-74 corridor and limited alternative river crossing locations.

2.2.2 Mississippi River Bridge Reuse Options for Roadway Uses

Opportunities to retain and reuse the existing Mississippi River bridges for vehicular traffic were considered. As discussed in [Section 1, Purpose of and Need for Action](#), the existing Mississippi River bridges are functionally obsolete and contribute to the safety, capacity, operational, and travel reliability concerns in the corridor. The bridges consist of twin parallel structures with suspension type spans over the navigational channel and a total structure length of 3,370 feet. The Iowa-bound (northbound) structure was constructed in 1935, and provides a roadway deck 24 feet and 3 inches wide carrying two lanes of northbound I-74 traffic. The complementary Illinois-bound span (southbound) was completed in 1960, with a 24-foot-wide roadway deck accommodating two lanes of southbound I-74 traffic. Neither of the existing structures has shoulders. Bridge reuse options considered reuse of either both of the existing bridges or of only the Iowa-bound bridge, which is eligible for the National Register of Historic Places (NHRP) ([Section 3.12, Cultural Resources](#)). A broad range of alternatives was considered to avoid or minimize potential impacts to the Iowa-bound bridge. These included widening the existing bridges, reuse of the existing Iowa-bound bridge for local traffic, or reuse of the existing bridges in combination with new bridges for I-74 traffic. Additionally, options for converting the Iowa-bound bridge for non-roadway uses (either for transit or bicycle/pedestrian travel modes) were also considered ([Section 2.2.5, Non-Roadway Alternatives](#)); a bicycle/pedestrian option is still under consideration.

Based on analyses and public input, roadway reuse options are not reasonable and were not retained for further consideration. A discussion of each roadway option considered follows.

Existing Bridge Widening

The first consideration was to evaluate whether the existing I-74 bridges could be widened to accommodate the required additional mainline capacity. It was determined that the existing Mississippi River bridges cannot practically be widened due to the design characteristics of the suspension spans. Effectively, all major structural elements would need to be dismantled and rebuilt to accommodate the required I-74 roadway width, including

the complete deck structure, main suspension cables, towers and foundations, and cable anchorages. The bridges would be out of service for an extended period of time. Therefore, widening of the existing bridges would be neither viable nor practical.

Local Roadway Bridge Option

This option would provide a new wider crossing for I-74 traffic, and retain the existing Iowa-bound Mississippi River bridge as a new local roadway connector. The existing bridge would operate with two 12-foot lanes (one lane in each direction). Approach local roadway structures and new local roadway connections would be required to accommodate this crossing.

The Iowa-bound bridge was selected as the preferred bridge for reuse owing to its historic significance. However, it should be noted that concern was expressed that due to the advanced age of the Iowa-bound bridge, life-cycle costs for reuse of the Iowa-bound bridge may be higher than for reuse of the Illinois-bound bridge.

This option was evaluated but not retained for further consideration since it would not meet project purpose and need. Analysis of area travel patterns revealed negligible demand for local trips between downtown Bettendorf and downtown Moline; less than 2 percent of daily trips across the I-74 bridges are made between the two business districts. Further, this option would require continued costly maintenance and repairs to the existing Mississippi River bridge, as well as approximately 2,500 feet of new approach roadway to connect the bridges on both sides of the river to the street system. (It should be noted that a similar option for a new local roadway crossing was also identified but not recommended for further evaluation with the prior MIS.)

Southbound I-74 Bridge Option

This option would use the existing bridge pair for one direction of travel (southbound [SB] I-74), and provide a new bridge in close proximity to the existing bridges for the other direction of travel (northbound [NB] I-74). This option was developed in response to public comments received following Public Information Meeting #1. Given the available existing bridge widths and the physical separation between the existing bridges, SB I-74 would need to be split via a collector-distributor (C-D) roadway system extending from south of 7th Avenue in Illinois to north of Grant Street/U.S. 67 in Iowa. The existing bridges would operate with two lanes (SB C-D roadway) and two lanes (SB mainline roadway). A schematic layout of the SB I-74 bridge option is shown on [Figure 2-4, Southbound I-74 Bridge Re-Use Options](#), at the end of Section 2.

Analyses revealed that the SB I-74 bridge option would not meet purpose and need. Most notably, it would not provide adequate capacity in the design year, would retain undesirable roadway design features, and would not fully address safety concerns along I-74.

Construction of a Third Center Bridge

This option was considered in response to public comments received following Public Information Meeting #2. This option would retain local I-74 traffic on the existing twin bridges, and would include construction of a new four-lane bridge between the existing twin bridges for longer distance through traffic (I-74 express lanes). Similar to the SB I-74 bridge option discussed above, this option would require that I-74 traffic destined for downtown Moline and Bettendorf be physically separated from longer distance through

traffic upstream of the river approaches. Thus, the existing twin bridges would each continue to operate with two lanes (I-74 local traffic), while the new center bridge would operate with two lanes in each direction (I-74 express lanes).

The construction of a third center bridge was considered but not recommended for further evaluation as it is not practical or viable due to a combination of physical and structural constraints, and as this option would not meet purpose and need. A review of the existing structure layout reveals that the available clear distance between the existing suspension span towers is approximately 33 feet. Interstate design standards require that a minimum of two travel lanes (in one direction) be provided for mainline interstate traffic, requiring a minimum bridge width of 94 feet. Thus, a new interstate bridge could not be physically constructed between the existing twin bridges. Additionally, a major disadvantage of constructing a new bridge in close proximity to existing bridges is the additional time, costs, and risks (including risks of damage to existing bridge elements) associated with complex construction operations in restricted space. The existing I-74 bridges would likely need to be closed to traffic for an extended period. In addition to the noted physical constraints, this option would not meet the project purpose and need as it would retain the undesirable alignment and cross section features on the existing I-74 bridges, would not allow improvements to the undesirable ramp design at River Drive and U.S. 67, would not adequately improve traffic operations along I-74, and would require closure of the I-74 bridges during construction.

2.2.3 Mississippi River Crossing Options

Various design options were considered for the proposed new I-74 Mississippi River crossing bridges. Design options considered include a broad range of river crossing location options and river crossing lane configuration options. A summary of options considered but not recommended for further consideration follows.

River Crossing Location Options

A number of bridge location options were considered. Options were developed to improve the horizontal and vertical alignment of the approach roadway, to accommodate I-74 traffic during construction, and to facilitate the required roadway widening.

As discussed in [Section 2.1, *Alternatives Development Process*](#), location options were explored within a broad band width extending from 12th Street (Bettendorf)/18th Street (Moline) on the west to the Isle of Capri Casino to the east ([Figure 1-1, *I-74 Iowa-Illinois Corridor Study Location Map*](#), at the end of [Section 1, *Purpose of and Need for Action*](#)). Given the highly developed urban nature of the area, a broader study area was not deemed reasonable. Tolerances for easterly and westerly alignment shifts were then tested by developing possible general alignment options and evaluating their potential environmental and community impacts. The viability of each alignment option was tested through a sequential qualitative evaluation of engineering factors and potential environmental impacts, and input from area officials, the I-74 Project Advisory Committee, and the public. Options that would not satisfy engineering requirements or would result in disproportionate impacts to adjacent resources and communities were either eliminated from consideration, or refined and combined with other alignment options.

River crossing location options considered are depicted on [Figure 2-1, Mississippi River Crossing Location Options](#), at the end of Section 2. Location options evaluation findings are noted on Figure 2-1 and are summarized below:

- Ten river crossing alignment options (Alignments A through J), representing both easterly and westerly alignment shifts, were initially developed.
- Alignments A, D, and H were unable to satisfy the established engineering requirements or had disproportionate environmental and community impacts. As each of these alternatives was found to be unreasonable, none will be considered further.
- Revised Alignments C, E, and F were developed to represent the range of reasonable location alternatives and their related impacts. These revised alignments included design refinements to minimize environmental and community impacts of the original alignments. It should be noted that Alignment C represents the minimum practical westerly alignment shift and was developed to minimize impacts to resources, major developments, and features west of I-74 (existing bluffs south of 7th Avenue, Scottish Rite Cathedral, LeClaire Hotel, Moline Water Treatment Plant, Deere & Co. offices and computer center, Leach Park, McManus Park, and multiple residential properties). Revised Alignment C was subsequently determined to be unreasonable following a more detailed evaluation of construction staging requirements and environmental and socioeconomic issues. Specifically, in order to minimize impacts, Alignment C would cross existing I-74 at two locations on the Illinois approach. An analysis of construction staging requirements revealed that it would not be practical to construct Alignment C while maintaining traffic along I-74 both due to the elevation difference between existing and proposed profiles and close proximity to the existing structure. As discussed in [Section 1, Purpose of and Need for Action](#), maintenance of traffic during construction is critical to the economic stability of the downtown areas, as approximately 70 percent of traffic on this section of I-74 is destined for one of the two downtown areas. Further, Alignment C has greater potential environmental and socioeconomic impacts than Alignments E or F, including greater potential impacts to 4(f) properties and Section 106 properties. Alignment C is representative of the other westerly alignments with regard to land impacts. The I-74 Project Advisory Committee and federal/state regulatory and resource agencies reviewed this recommendation and agreed that Alignment C and all westerly alignment shifts are unreasonable. Alignment C was therefore not carried forward for further consideration.

River Crossing Lane Arrangement Options

Various lane arrangement and structure forms were also considered for a new I-74 Mississippi River crossing. The goal was to identify an optimal lane arrangement that would provide a functionally acceptable interstate river crossing for a reasonable period of time beyond the current 2025 planning horizon. Lane arrangement options considered include an eight-lane mainline crossing, six-lane mainline crossing, four-lane mainline crossing with a four-lane C-D roadway, and a double-deck crossing. Lane arrangement options considered are shown and summarized in [Table 2-1, Mississippi River Bridge Lane Arrangement Options](#), at the end of Section 2.

For use in the analysis of potential environmental consequences, the eight-lane mainline crossing option was selected for further development, while the other three options were not recommended for further consideration for reasons described in [Table 2-1, Mississippi River Bridge Lane Arrangement Options](#), at the end of Section 2. However, it should be noted that a final decision regarding the lane arrangement for a new Mississippi River crossing has not been made at this stage of project development. The eight-lane option was selected because it would provide acceptable capacity through and beyond the current 2025 planning horizon, allow a positive median separation to prevent cross-over crashes, and provide for auxiliary lanes to accommodate high volumes of entering and exiting traffic at the River Drive and U.S. 67 ramps. It should be noted that provision of a new multiuse trail along one side of the new Mississippi River bridge(s) remains under consideration. This would provide a multiuse trail, approximately 10 feet wide, adjacent to I-74 with trail connections to both the Iowa and Illinois riverfront trail systems. The trail would be physically separated from mainline I-74 and would be designed in compliance with Americans with Disability Act (ADA) guidelines.

2.2.4 Interchange Options

A broad range of interchange location and type options was considered. Interchange improvements are proposed for several reasons. As discussed in [Section 1, Purpose of and Need for Action](#), existing interchanges within the project corridor contribute to the overall capacity, operational, and safety problems in the corridor. A review of design characteristics also revealed that interchange design features do not comply with current interstate design standards. Additionally, interchanges near the proposed Mississippi River crossing improvements would need to be reconfigured to allow access to realigned I-74.

A summary of the interchange development process and considerations is presented below. A summary of interchange options assessed but not recommended for further consideration follows.

Interchange Development Considerations and Process

Multiple interchange location and type options were considered. Options were developed to satisfy the following criteria:

- **Meet current interstate design criteria.** Interchange improvements were designed to satisfy current federal and state design standards and practices. Of particular concern were interchange spacing along I-74, design of entrance and exit ramp terminals along I-74, and ramp vertical grades.
- **Improve overall traffic operations.** Interchange improvements were developed to provide acceptable traffic operations for projected design year traffic demand. Various interchange ramp types (e.g., loop versus connector ramps), interchange forms (e.g., diamond versus partial cloverleaf type), and local roadway improvements were considered to optimize traffic operations along I-74 and connecting local roadways.
- **Improve overall safety performance.** Overall interchange design and traffic operational improvements were developed to optimize safety. This included lengthening ramp acceleration and deceleration tapers, improving ramp vertical grades, and minimizing conflicts between ramp traffic and mainline traffic along I-74.

- **Improve accessibility and traffic circulation.** Interchange options were developed to enhance accessibility to adjacent communities via improved connections to major local roadway corridors. Where possible, improved direct access to state marked routes as well as full access interchanges were considered.
- **Complement local transportation and land use plans.** Interchange options were designed to complement local transportation plans and land use plans. Among the issues considered were long-range plans for improvements to connecting local roadways, and potential impacts to existing and planned land use.

An iterative process was used to evaluate possible interchange location and type options. Workshop meetings and small group meetings were held with DOT and local agency staff to develop, discuss, and evaluate potential interchange locations and forms. Options that appeared to be technically viable were developed to a greater degree of detail and were evaluated through a qualitative analysis of engineering factors and potential environmental impacts, with input from area officials and the I-74 Project Advisory Committee. Factors considered included compatibility with current and projected travel patterns, design characteristics, and potential environmental and community impacts.

Interchange Options Assessed But Not Recommended for Further Consideration

Various interchange options were considered within the project corridor. Interchange options considered are depicted and discussed in [Table 2-2, *Interchange Options Evaluation*](#), at the end of Section 2. A description of each option considered, as well as the rationale for not recommending the interchange options for further consideration, is included in the table. Interchange options carried forward are described in [Section 2.3.2, *Build Alternatives*](#).

2.2.5 Non-Roadway Alternatives

Non-roadway alternatives were considered as stand-alone alternatives for addressing the various design concerns in the project corridor. These included transportation system management techniques, transit enhancements, bicycle/pedestrian accommodations, and options for diverting I-74 traffic to adjacent highway corridors. Additionally, non-roadway reuse options were considered for the existing I-74 Iowa-bound bridge under the circumstance that new structures were built to carry I-74 across the Mississippi River, but the existing structure was retained as a result of its NRHP status.

The non-roadway alternatives considered as stand-alone build alternatives were found to be unreasonable since they would not meet project purpose and need. In all cases, the alternatives are used by a very small percentage of the traveling public. An examination of these options showed that while they do play a role in reducing single occupancy vehicles and optimizing the efficiency of the overall transportation system, the capacity, operational, safety, and design problems along I-74 cannot be solved by these types of improvements alone. Therefore, where appropriate, non-roadway improvements were included with the proposed build alternatives to improve transportation system connections and overall operations and to encourage alternatives to single-occupancy vehicles.

Transportation System Management

Transportation system management includes a variety of tools, techniques, and policies aimed at improving vehicular flow. ITS applications are aimed at improving the efficiency and operation of the existing transportation system. Potential benefits include reduced travel delays, quicker incident response, and better use of travel options.

Although ITS applications will improve the efficiency of the existing transportation system, they will *not* correct the safety, capacity, and condition concerns along I-74. Deployment of ITS is not a reasonable stand-alone alternative because it would not meet the transportation needs described in the project purpose and need. ITS applications should, however, be included as an element of both the no-action and build alternatives for I-74 since they will improve the efficiency of the transportation system.

The 2025 RTP recommends a two-step deployment of ITS to improve operations of the existing transportation system. Features of the proposed regional ITS network include freeway and incident management systems, traveler information, traffic signal systems, and transit system enhancements. Deployment of ITS is initially recommended along the I-74 corridor, with eventual expansion throughout the entire Quad Cities region. It should be noted that the Iowa and Illinois DOTs are presently proceeding with design and deployment of a bridge management system for the I-74 river crossing, and with development of an ITS architecture and deployment plan for the entire I-74 corridor. The bridge management system will provide improved incident response procedures and enhance motorist information regarding traffic operations at the I-74 river crossing. Similarly, the ITS architecture will identify tools to optimize the efficiency of traffic operations throughout I-74.

Transit

Public transit is a vital element of the Quad Cities transportation network. Public transit systems provide linkages between multiple communities in the bi-state region, access to employment and community centers, and access to area special events. In addition, area transit systems serve as an important means of travel for the elderly, youth, and economically disadvantaged citizens.

Current and planned transit systems in the Quad Cities region include a broad array of fixed-route bus services, limited “Dial-A-Ride” services, van pool services, historic trolley routes, and water taxi services. Transit services are provided by Bettendorf Transit, City of Davenport CitiBus, and MetroLINK. Current and planned transit services are depicted on [Figure 2-5, Quad City Area Transit Facilities](#), at the end of Section 2, and are described in [Section 3, Affected Environment](#).

In addition to currently planned transit improvements, investigations are underway to assess the feasibility of new rapid transit service in the Quad Cities region, potentially along existing freight rail corridors. As an initial step, MetroLINK is conducting the Quad Cities Balanced Growth Project, a study examining the potential to combine multi-jurisdictional land use policies and regulations with the transit development process to support a major improvement to the region’s mass transit system. Although this study is currently focused on transit oriented development and corridor opportunities within Illinois, it is also exploring opportunities for new transit corridors between Illinois and Iowa communities.

The *Quad Cities Balanced Growth Project Summary Report* (July 2002) indicates that, pending creation of a stronger transit market in the corridor, the project team recommends pursuing incremental development of rapid transit as a prudent approach. For the present, Bus Rapid Transit (BRT) is the suggested rapid transit mode, as it offers the advantages of the alternative rail systems at significantly lower capital and operating costs.

The existing and planned transit system will continue to provide important economic and social links between communities and to serve as a viable alternative to single-occupancy vehicle trips in the Quad Cities region. Indeed, regional forecasts indicate that with continuing regional growth, transit ridership demand will increase from over 3.7 million riders (1999) to over 7.8 million riders (2025). This forecasted 100-percent increase in ridership by 2025 underscores the growing importance of the region's transit system as an alternative to the single-occupancy vehicle. Despite this substantial forecasted transit ridership growth, however, forecasts also predict continued growth in vehicle trips on the region's highway system. As an example, cumulative vehicle trips across the Mississippi River are forecast to increase from 150,300 (1999 ADT) to 223,000 (2025 ADT). This includes a forecasted growth in vehicle trips along I-74 near the Mississippi River from 74,000 ADT (2000) to 78,000 ADT (2025). (Note that forecasted I-74 traffic, which shows only modest traffic growth, assumes removal of tolls from the Centennial Bridge and construction of a new Mississippi River crossing between Bettendorf and East Moline. Additional discussion of I-74 traffic forecasts is contained in [Section 2.2.1, *Engineering Requirements*](#).)

Given the current and forecasted capacity concerns along I-74, and the combination of roadway safety, operational, and condition issues, transit improvements will not individually meet the transportation needs and objectives identified in the purpose and need. Therefore, transit improvements are not a reasonable stand-alone alternative for I-74.

Proposed roadway improvements for the I-74 corridor should be developed to accommodate existing and planned transit services, to enhance modal connections, and to encourage increased transit ridership. Based on discussions with area transit providers and the Bi-State Regional Commission, the following transit accommodations should be incorporated into the proposed build alternatives:

- Roadway design features that could enhance transit operations, such as bus turnouts along connecting arterial roadways or ramp bypass lanes for buses
- ITS with transit features, such as vehicle-tracking systems and rider schedule information

Diversion of I-74 Traffic to Other Area Interstate Facilities (Signing)

The option of rerouting I-74 onto I-280 and renaming I-74 to I-74 Business was investigated. Over 95 percent of the traffic on the Mississippi River bridges has either an origin or a destination in the study area. Therefore, given this high percentage of local traffic and the distance to other interstate facilities (about 7 miles and 8 miles to I-280 and I-80, respectively), only a small portion of the existing traffic (less than 5 percent) could be diverted to adjacent interstate routes. Motorists that remain on I-74 would continue to experience congested conditions, safety issues, and poor travel dependability. Additionally, this alternative would not provide improved transportation connections and would not provide economic sustainability in the project corridor. Therefore, it does not meet the purpose and need.

Diversion of I-74 Traffic to the Local Road System

Diverting traffic to local routes is not a practical solution given the high volume of river crossing traffic along I-74, regional travel patterns, and the lack of viable alternative local road river crossings. Presently, local roadway crossings of the Mississippi River are provided at the Arsenal Bridge (about 3 river miles west of I-74) and at the Centennial Bridge (about 4 river miles west of I-74). Long-range plans also call for construction of a new local road river crossing between Bettendorf and East Moline (Bettendorf-East Moline Bridge, about 3 river miles east of I-74). Diversion of interstate traffic to adjacent existing or planned local roadway crossings is not viable due to design and capacity constraints on these river crossing bridges and local roadways, as well as the indirect travel routes that motorists would be required to take. Projected 2025 traffic along I-74, which assumes the removal of tolls from the Centennial Bridge in addition to construction of a new Bettendorf-East Moline Bridge, is 78,000 ADT.

The Arsenal Bridge, originally constructed in 1896, is a double-deck bridge with a swingspan and accommodates one travel lane in each direction on the lower deck. This crossing carries about 18,000 ADT, and operates at LOS E. (For further discussion regarding LOS, see [Section 1.4.1, Traffic Demand and Service](#)). Further, the Arsenal Bridge cannot be widened due to the design characteristics of the existing bridge. Due to the physical configuration, design, and capacity constraints on the Arsenal Bridge, diversion of I-74 traffic to this crossing is not a viable option.

The Centennial Bridge was constructed in 1940 as a tied-arch type structure, and presently accommodates two travel lanes in each direction. The crossing currently carries approximately 15,000 ADT and operates at LOS B. Motorists experience traffic conditions not impeded by other vehicles and maneuverability within the traffic stream is good. Motorists are not generally subjected to appreciable tension under this range of traffic conditions. Removal of tolls from the Centennial Bridge occurred in May 2003 and is projected to result in a measurable diversion of traffic which avoided this tolled crossing. Regional traffic forecasts predict that traffic will increase on the Centennial Bridge significantly by 2025 (33,800 ADT), in part as a result of traffic diversions from the adjacent Arsenal Island and I-74 bridges. Prior studies concluded that about 7 percent of I-74 traffic would divert to the Centennial Bridge following the removal of tolls.¹ (Even with this anticipated traffic diversion, traffic demand on I-74 will exceed available capacity.)

The planned Bettendorf-East Moline Bridge is projected to carry approximately 15,600 ADT in 2025. Analyses reveal that if constructed, the new Bettendorf-East Moline Bridge would temper future traffic growth along the I-74 corridor (from an existing traffic volume of 74,000 VPD to a projected 2025 traffic volume of 78,000 VPD). However, given the substantial distance motorists would have to travel out of their way to cross the river, trips with origins and/or destinations near the I-74 corridor would likely remain on the I-74 crossing.

As described above, the diversion of traffic to local roads is not reasonable given the high volume of river crossing traffic along I-74, regional travel patterns, and the lack of viable alternative local road river crossings. This alternative would not address components of the purpose and need, including improving safety performance along the corridor, bringing the

¹ Quad Cities Mississippi River Crossing Major Investment Study (MIS) (December 1998)

facility up to current American Association of State Highway and Transportation Officials (AASHTO) standards, reducing traffic congestion and improving the dependability of traffic. It additionally would not address the need to sustain the economic viability in the I-74 corridor. Geometric conditions on the bridge and roadway sections, which lack the capacity to prevent traffic congestion or to provide reliable travel, and currently contribute to unsafe conditions, would not be improved. Additionally, connections to downtown attractions or other modes of transportation used for moving freight or goods would not be improved, and would thereby not enhance opportunities for viable economic transactions. Rather, the transportation facility downtown will continue to experience more crashes than the national average. Moreover, traffic operations at interchanges will continue to deteriorate and will not allow efficient and timely transportation of people and goods to their destinations, especially as traffic on the facility increases over the years. Thus, diversion of I-74 traffic to the local road system does not meet the purpose and need.

Bicycle/Pedestrian Accommodations

The Quad Cities region has an extensive network of multipurpose trails that serve both transportation and recreational uses. Area trails comprise links of several significant trail networks, including the 475-mile Grand Illinois Trail, the Mississippi River Trail, and the 6,356-mile American Discovery Trail. The 2025 RTP recommends continued expansion of the region's trail network as a means both to improve quality of life and to encourage a reduction in the use of motorized transportation in the Quad Cities region. Existing and planned trails are shown on [Figure 2-6, Quad City Area Bicycle/Pedestrian and Rail Facilities](#), at the end of Section 2 and are described in [Section 3, Affected Environment](#).

In addition to the multipurpose trail improvements identified in the 2025 RTP, area officials have expressed interest in bicycle/pedestrian accommodations along the I-74 bridges over the Mississippi River. The Bi-State Regional Commission adopted an amendment to the 2025 RTP to include new bicycle/pedestrian trail linkages across the Mississippi River in June 2002. In January 2003, the Cities of Moline and Bettendorf jointly recommended that a bicycle/pedestrian trail crossing be included on the new I-74 river crossing, citing that this project presents an opportunity for centrally located river crossing access for bicycle and pedestrian traffic.

The existing and proposed multipurpose trail system identified in the 2025 RTP will enhance connections between commercial, residential, and recreational areas and provide an option to motorized transportation for short distance trips. However, these improvements will not appreciably reduce demand for motorized transportation along the I-74 corridor or across the Mississippi River, nor will they correct the safety, operational, and condition issues along I-74, meaning this alternative does not meet purpose and need. Therefore, bicycle/pedestrian accommodations are not a reasonable stand-alone alternative for this project.

Bicycle and pedestrian accommodations should be included as an element of the build alternatives for I-74 in order to provide increased opportunities for non-motorized travel and to strengthen linkages between communities. Specifically, the following should be considered and, where appropriate, included in the proposed build alternatives:

- Existing trail crossings within the I-74 corridor will be maintained. Construction operations will be staged in a manner to minimize trail closures and disruptions.
- Planned trails along local streets across I-74 should be accommodated with proposed improvements. Features such as paved trails/sidewalks, crosswalks, and pedestrian activated traffic signals should be provided, where appropriate. Provision of a multipurpose trail across the Mississippi River should be considered. Options to be evaluated with an improved I-74 river crossing include accommodating a multipurpose trail along the existing I-74 river-crossing structure, or constructing a physically separated multipurpose trail along a new river-crossing structure.

Non-Roadway Reuse Options for Iowa-Bound Bridge

Non-roadway transportation uses were also considered for the Iowa-bound Mississippi River bridge. As previously discussed, area officials have expressed interest for a new bicycle/pedestrian connection along the I-74 crossing of the Mississippi River. Also, studies currently underway are considering opportunities for an expanded regional transit system, including the possibility for light-rail transit serving both Illinois and Iowa communities. The feasibility of converting the Iowa-bound bridge for either of these uses was evaluated. A summary of these options and analysis findings is presented below.

- **Bicycle/Pedestrian crossing reuse option.** This option would retain the existing Iowa-bound bridge for continued use as a bicycle/pedestrian trail upon abandonment of the bridges for I-74 traffic. This existing bridge would be retrofitted to safely accommodate use by pedestrians and bicyclists. New trail connections would be provided on the Iowa and Illinois river approaches to connect the bridge with adjacent riverfront trail systems. The trail connections and bridge would be designed in compliance with ADA requirements.

This option appears to provide a reasonable alternative transportation use for the Iowa-bound bridge and appears to be technically viable. Therefore, it was carried forward for further consideration ([Section 2.3.2, Build Alternatives.](#)) However, it should be noted that this option can only be implemented if there is a commitment from a local agency to assume jurisdiction, future liability, and financial responsibility for the bridge. Involved local agencies (Scott County, Rock Island County, Moline, and Bettendorf) were contacted to determine whether any agency is interested in assuming future responsibility for the Iowa-bound bridge. Each agency indicated that they have no interest in assuming future responsibility for the existing bridge due to a combination of high capital and operation/maintenance costs, as well as concerns that retention of the bridge would constrain design options for the new I-74 bridge.

- **Transit crossing reuse option.** This option would retain the Iowa-bound bridge for continued use as a transit corridor upon abandonment of the bridges for I-74 traffic. Use of the bridge both as an exclusive bus crossing or as a potential future rail transit corridor was considered.

The bus crossing option would essentially retain the existing Iowa-bound bridge in its present form but would require construction of costly and complex new connections to adjacent local roadways. Based on discussions with MetroLINK, there would be very low anticipated demand for an exclusive bus crossing. Rather, bus transit needs can

readily be accommodated along the improved I-74 crossing. Therefore, the bus crossing option was found to be unreasonable for further consideration.

The rail transit option would require strengthening of the existing bridge, as well as construction of connections to adjacent rail corridors. Early investigations revealed that the bridge structural design is not suitable for rail transit, and that connections to adjacent rail corridors could not be established due to the vertical elevation differences between the bridge and existing railways. It should also be noted that there is presently no existing transit rail service in the Quad Cities region, and that current regional transportation plans do not include development of rail transit. Discussions with MetroLINK confirmed that the rail transit option is not reasonable due to the issues cited above. Therefore, the rail transit crossing option was removed from further consideration.

2.3 Alternatives Retained for Detailed Evaluation

2.3.1 No-Action Alternative

The no-action alternative is defined as no new major construction along the I-74 corridor. It does not meet the project purpose and need, but was carried forward as a basis for comparison for the build alternatives.

Improvements implemented with the no-action alternative would be limited to short-term restoration activities (maintenance improvements) needed to ensure continued bridge and roadway pavement integrity. The design of the existing roadway, including its location, geometric features, and current capacity constraints, would remain unchanged. Under this alternative, some minor operational improvements could be anticipated, such as deployment of a traffic management system for the I-74 Mississippi River bridges, and minor improvements at high volume ramp intersections.

Under the no-action alternative, it is assumed that committed and planned improvements (as detailed in Iowa and Illinois DOT multiyear programs and in the 2025 RTP) would still be undertaken. The no-action alternative assumes that planned or committed highway improvements (baseline improvements) identified in [Table 2-3, *Baseline Improvements for No-Action Alternative*](#), will be undertaken.

TABLE 2-3
Baseline Improvements for No-Action Alternative

Type	Project Location	Description
Highway	I-74 from 23 rd Avenue to 53 rd Street	Maintenance improvements *
Highway	53 rd Street from Elmore to Utica Ridge Road	Widening to six lanes
Highway	Spruce Hills Road (U.S. 6) from I-74 to Utica Ridge Road	Widening to six lanes
Highway	Centennial Bridge	Removal of tolls
Highway	Bettendorf-East Moline Bridge	Construction of new four-lane river crossing

Source: 2025 Quad Cities Area Long Range Transportation Plan

* 2025 RTP proposes widening of I-74 from IL 5 to 53rd Street

2.3.2 Build Alternatives

The build alternatives (proposed alternatives) retained for detailed study represent the range of reasonable and representative alternatives that meet project purpose and need. Proposed alternatives were developed on the basis of planning and design standards discussed in [Section 2.2.1, *Engineering Requirements*](#). Key features of the proposed alternatives are depicted on [Figure 2-7, *Build Alternatives Key Map*](#), at the end of Section 2, and have been related to three sections of the corridor, i.e., the South Section, the Central Section (including the Mississippi River crossing), and the North Section. Where appropriate, multimodal improvements were also incorporated with the proposed alternatives.

Within the Central Section, three principal Alignments, C, E, and F, were developed and considered. However, Alignment C was determined to be unreasonable and not carried forward for further consideration, as it would not be practical to construct this alternative while maintaining traffic along I-74. Also, Alignment C would have greater potential environmental and socioeconomic impacts than the remaining build alternatives.

Design variations were also developed and considered at service interchanges in the Central Section and along the North Section, and at connecting local roadways in downtown Bettendorf. The interchange variations could be applied to either alignment alternative as shown on [Figure 2-8, *Build Alternatives, Alignment and Interchange Variations*](#), at the end of Section 2. Similarly, variations in design for connecting local roadways could generally be combined with either alignment alternative or interchange variation as shown on [Figure 2-9, *Build Alternatives, Downtown Bettendorf Local Roadway Variations*](#), at the end of Section 2.

A summary of the proposed alternatives with associated design variations in the South, Central, and North Sections follows. An evaluation of the engineering performance characteristics of the proposed alternatives is included in [Section 2.4, *Evaluation of Proposed Alternatives*](#).

South Section (23rd Avenue to 12th Avenue)

The proposed alternative in the South Section includes reconstructing and widening I-74 to accommodate three 12-foot through lanes in each direction. In addition, 12-foot auxiliary lanes would be provided between 23rd Avenue and 7th Avenue (NB I-74), and between Grant Street and 23rd Avenue (SB I-74). Based on current design standards, a paved barrier median about 30 feet wide would be provided to separate opposing traffic. The proposed widening would be accomplished within the existing median in order to minimize impacts to adjacent land uses. It should be noted that the proposed roadway width reflects current design standards and could be revised during future phases of this project. The proposed typical cross sections for the proposed alternatives are shown on [Figure 2-3, *Typical Proposed Cross Section*](#), at the end of Section 2. The proposed alternative in the Illinois Section is shown in [Appendix A, *Build Alternatives Exhibit*](#) (Sheets 1 through 3).

The existing horizontal and vertical alignment of I-74 would generally be maintained in the South Section, with the exception of minor adjustments to the vertical alignment near 12th Avenue. This adjustment is proposed to improve motorist sight distance and to meet current design standards.

The 23rd Avenue interchange would be improved to accommodate current and projected traffic demand, to improve safety features, and to comply with current design standards. Specifically, minor design improvements are proposed at entrance and exit ramp terminals and at the ramp intersections along 23rd Avenue. Proposed interchange improvements are summarized in [Table 2-4, Proposed Interchange Improvements](#), at the end of Section 2.

Existing mainline and overhead structures would be improved to meet design criteria, accommodate the proposed roadway widening, and to provide acceptable vertical and lateral clearances. All existing mainline structures would be reconstructed or repaired and widened as necessary to accommodate the proposed roadway improvements. This includes I-74 bridges over the 19th Street collector and 12th Avenue. Existing overhead bridges at 27th Street and 23rd Avenue would be retained in-kind. Where necessary, crossroads would be reconstructed near I-74 to provide adequate vertical clearance and to accommodate design improvements. This includes reconstruction of 23rd Avenue and 12th Avenue in Moline.

The proposed alternative can be accommodated within existing right-of-way along the South Section. Where appropriate, retaining walls would be constructed to avoid property impacts.

Central Section (12th Avenue to Lincoln Road)

The proposed alternatives in the Central Section include reconstructing and widening I-74 to accommodate three 12-foot through lanes in each direction, and constructing new I-74 Mississippi River crossing bridge(s). In addition, 12-foot auxiliary lanes would be provided between 23rd Avenue and 7th Avenue (NB I-74), River Drive and Grant Street (NB I-74), Grant Street and U.S. 6 (NB I-74), and Grant Street and 23rd Avenue (SB I-74). Based on current design standards, an approximately 30-foot-wide paved barrier median would be provided to separate opposing traffic. The proposed roadway width reflects current design standards and could be revised during future phases of this project. The typical cross sections for the proposed alternatives are shown on [Figure 2-3, Typical Proposed Cross Section](#), at the end of Section 2. The proposed alternatives in the Mississippi River crossing area are shown in [Appendix A, Build Alternatives Exhibit](#) (Sheets 4 through 18).

Existing mainline and overhead structures would be improved to meet design criteria, accommodate the proposed roadway widening, and to provide acceptable vertical and lateral clearances. All existing mainline structures would be reconstructed and widened as necessary to accommodate the proposed roadway improvements. This includes I-74 bridges over 19th Street, 7th/6th Avenue, 5th Avenue, 4th Avenue/CRI&P RR, River Drive, the Mississippi River, relocated State Street, U.S. 67/Grant Street, Kimberly Road, and Lincoln Road. Where necessary, crossroads would be reconstructed near I-74 to provide adequate vertical clearance and to accommodate design improvements. This includes reconstruction and lowering of 19th Street, 6th Avenue, Holmes Street (if an underpass is to be provided at this location), and Lincoln Road. Approximately 21.2 to 26.2 acres of proposed right-of-way would be required for the proposed alternatives in the Central Section, depending on the alignment alternative and associated interchange and local roadway design variations.

Two alignment alternatives with several interchange designs and local roadway variations remain under consideration near the Mississippi River. As noted previously, the interchange variations could be applied to either alignment alternative, and local roadway

design variations could be combined with either alignment alternatives and interchange variations. A description of these alternatives and variations follows.

Alignment Alternatives. The horizontal and vertical alignment of I-74 would be improved to meet roadway design criteria and to facilitate construction staging. Two alignment alternatives, Alignment E and Alignment F, remain under consideration.

Alignment E. Alignment E maintains the series of reverse horizontal curves on the Illinois approach to the Mississippi River, but increases the horizontal radius and tangent distance between the successive curves. The proposed alignment diverges from existing I-74 near 7th Avenue, shifting I-74 to the east. The alignment proceeds in a northerly direction across the Mississippi River on a course parallel to the existing bridges and offset approximately 230 feet to the east of the existing bridges. The proposed alignment meets the existing centerline near Kimberly Road in Iowa. Alignment E meets current design criteria by improving the curvature design on the Illinois approach.

Alignment F. Alignment F eliminates the reverse curves between 7th Avenue and the Mississippi River on the Illinois approach. The proposed alignment diverges from existing I-74 near 7th Avenue and proceeds in a northeasterly direction on tangent alignment across the Mississippi River. This results in an easterly alignment shift of up to approximately 780 feet from the existing centerline. The proposed alignment meets the existing centerline near Kimberly Road in Iowa. Alignment F provides additional safety performance along mainline I-74 by eliminating the reverse curvature along the Illinois approach.

Interchange Variations. The interchanges in downtown Moline (at 7th Avenue and at River Drive) and in downtown Bettendorf (at U.S. 67) would be improved to accommodate current and projected traffic demand, to improve safety features, and to comply with current design standards. Two interchange design variations remain under consideration in downtown Moline and in downtown Bettendorf. These variations reflect design characteristics of the interchange options recommended for further consideration with earlier analyses (see [Section 2.2.4, Interchange Options](#)). For ease of reference, interchange variations were renumbered following the evaluation of interchange options. Proposed interchange improvements are summarized in [Table 2-4, Proposed Interchange Improvements](#), at the end of Section 2, and are briefly described below.

Downtown Moline. Variation M1 provides an improved full access interchange with ramp connections at 7th Avenue/19th Street and at 6th Avenue (IL 92 eastbound [EB]), as well as an improved half diamond type partial interchange at River Drive. Variation M2 provides an improved full access interchange with ramp connections at 7th Avenue/19th Street, at 6th Avenue (IL 92 EB), and at 4th Avenue (IL 92 westbound [WB]), as well as an improved half diamond type partial interchange at River Drive.

Traffic analyses reveal that both interchange variations would operate at an acceptable LOS and would provide improved connections to IL 92. Variation M2 provides optimal direct connections between I-74 and the existing IL 92 one-way couple system.

Downtown Bettendorf. Variation B1 provides an improved diamond type full access interchange at Grant Street (U.S. 67 WB), and eliminates existing ramps at State Street and at Kimberly Road. Variation B1 includes converting Grant Street near I-74 to a two-way street with three lanes in each direction, as well as associated modifications to adjacent local

roadway segments. Variation B2 provides an improved diamond with single-loop type full access interchange at Grant Street (U.S. 67 WB), and eliminates existing ramps at State Street and at Kimberly Road. Variation B2 includes converting a section of Grant Street to a two-way street with either two or three lanes in each direction, with associated modifications to adjacent local roadways.

Analyses were conducted to evaluate traffic operations of the interchange variations both at the interchange ramp intersections and along adjacent segments of Grant Street. Analyses reveal that both interchange variations (B1 and B2) would operate at an acceptable LOS at the interchange ramp intersections. However, an advantage of Variation B2 is that it provides optimal traffic flow for vehicles entering SB I-74 (via free-flow ramps). Along the adjacent segments of Grant Street, analyses indicate that if Grant Street is widened to two lanes in each direction, WB Grant Street east of the I-74 interchange would experience excessive vehicle queues. This results from the narrowing of Grant Street from three lanes WB (east of I-74) to the proposed two lanes WB (through the I-74 interchange). However, if Grant Street is widened to three lanes in each direction (either with interchange Variation B1 or B2), analyses indicate that Grant Street would operate at an acceptable LOS with no excessive vehicle queues.

Local Roadway Design Variations. Design variations were developed for local roadway improvements and bicycle/pedestrian accommodations near the Mississippi River. Specifically, variations were developed for the U.S. 67 transition design, local roadway access under I-74 in downtown Bettendorf, and for bicycle/pedestrian accommodations across the Mississippi River. A description and discussion of each local roadway design variation follows.

U.S. 67 Transition Design Variations. Build alternatives in downtown Bettendorf include providing an improved full interchange (with ramps to/from the north and south) at Grant Street. Currently, U.S. 67 through downtown Bettendorf operates as a one-way couple system (EB U.S. 67 along State Street, and WB U.S. 67 along Grant Street). As a result of the proposed I-74 interchange improvements, the section of Grant Street between 12th Street and 16th Street would need to be widened and converted to a two-way street to facilitate traffic flow with the improved I-74 interchange.

Two alternative design variations (diagonal connector variation and 90-degree connector variation) were developed for the U.S. 67 transition sections east and west of I-74. Traffic analyses reveal that both connector variations with associated local roadway improvements would operate at an acceptable LOS. The U.S. 67 transition design variations are compatible with either Alignment E or F, and with both the diamond type and single-loop type U.S. 67 interchanges. Also, different connector variations could be combined along U.S. 67; as an example, the 90-degree connector west of I-74 with the diagonal connector east of I-74. The U.S. 67 transition design variations are shown in [Appendix A, Build Alternatives Exhibit](#) (Sheets 14, 15, 17, 18), and are summarized below.

- **U.S. 67 Diagonal Connector Variation.** This variation would provide new connector roadway sections to route State Street traffic towards the improved I-74 interchange. The new roadway sections would be constructed along a diagonal orientation between 10th Street and 12th Street west of I-74, and between 15th Street and 17th Street east of I-74.

Based on a detailed traffic analysis, six or seven new traffic signals with associated intersection improvements would be required along the U.S. 67 corridor.

The diagonal connector better meets driver expectations along U.S. 67 and provides a smooth transition between the one-way couple system and two-way Grant Street. This variation also provides acceptable traffic operations along U.S. 67 and generally maintains existing north-south and east-west trip patterns through the corridor.

- **U.S. 67 90-Degree Connector Variation.** This variation was developed in response to public concerns regarding property impacts associated with the diagonal connector variation. The 90-degree connector variation would use existing local roadways to route traffic from State Street towards the improved I-74 interchange. Specifically, traffic would be routed via a series of left and right turns along 12th Street (west of I-74) and along 16th Street (east of I-74). Based on traffic analyses, seven or eight new traffic signals with associated intersection improvements would be required along U.S. 67.

The 90-degree connector provides acceptable traffic operations along U.S. 67. However, when compared to the diagonal connector, the 90-degree variation provides a less intuitive trip pattern for motorists along U.S. 67 and results in a somewhat greater disturbance to existing trip patterns.

Local Roadway Underpass Design Variations. Local roadway access under I-74 in downtown Bettendorf will be affected by the proposed alternatives. Presently, vehicle access under I-74 is allowed along Gilbert Street, State Street, Grant Street, Brown Street, Holmes Street/Mississippi Boulevard, and the Kimberly Road Connector. Build alternatives presented at the July 2002 Public Information Meeting indicated that vehicle access under I-74 would need to be eliminated at Brown Street and Holmes Street/Mississippi Boulevard. This is due to the fact that there is inadequate vertical clearance (or offset) between the proposed new I-74 ramps at Grant Street and the existing elevation of Brown Street and Holmes Street/Mississippi Boulevard.

In response to public concerns regarding how roadway closures under I-74 would affect accessibility in downtown Bettendorf, two local roadway underpass variations (Kimberly Road Connector underpass or Holmes Street/Mississippi Boulevard underpass) were developed and evaluated. Both underpass variations are compatible with either alignment alternative E or F and with the diamond type interchange at U.S. 67 (Variation B1). However, the Holmes Street/Mississippi Boulevard underpass could not be provided with the single loop type interchange at U.S. 67 (Variation B2) due to inadequate separation between the underpass and Kimberly Road. The local roadway underpass variations for the diamond type interchange (Variation B1) are shown in [Appendix A, Build Alternatives Exhibit](#) (Sheet 16), and are summarized below.

- **Kimberly Road Underpass.** This variation would maintain the existing Kimberly Road Connector underpass at I-74 and eliminate vehicular access under I-74 at Holmes Street/Mississippi Boulevard. Access for bicyclists and pedestrians under I-74 could be provided near Holmes Street/Mississippi Boulevard to optimize accessibility between neighborhood areas east and west of I-74. The Kimberly Road underpass could be constructed within existing right-of-way.

The Kimberly Road underpass maintains a reasonable connection between neighborhoods east and west of I-74. However, it requires minor out-of-distance travel and would result in a nominal increase in traffic volumes along U.S. 67.

- **Holmes Street/Mississippi Boulevard Underpass.** This variation eliminates the existing Kimberly Road connector underpass at I-74, and instead provides an underpass at Holmes Street/Mississippi Boulevard. Major design modifications would be required to accommodate an underpass at Holmes Street/Mississippi Boulevard. Specifically, Holmes Street/Mississippi Boulevard would need to be reconstructed and lowered by up to 6 feet between 13th Street and 14th Street to provide adequate vertical clearance under the proposed I-74 ramps at Grant Street. This would require a substantial amount of excavation, reconstruction of portions of the existing storm sewer system, and construction of retaining walls along the north and south sides of Holmes Street/Mississippi Boulevard. The proposed Holmes Street/Mississippi Boulevard underpass would require the acquisition of approximately .07 acres of additional right-of-way.

As described above, the Holmes Street/Mississippi Boulevard underpass would require more substantial reconstruction along the local roadway system when compared to the Kimberly Road underpass. However, the Holmes Street/Mississippi Boulevard underpass provides a more direct connection between neighborhoods, resulting in less out-of-distance travel and less diversion of neighborhood traffic to U.S. 67.

Bicycle/Pedestrian Variations for Mississippi River Crossing. The provision of an exclusive bicycle/pedestrian trail crossing along I-74 over the Mississippi River is being considered in response to local transportation plans and public interest. Three variations for bicycle/pedestrian accommodations across the Mississippi River remain under consideration. Each variation is compatible with either Alignment E or F and with both the diamond type and single-loop type U.S. 67 interchanges. Bicycle/pedestrian variations are summarized below.

- **No bicycle/pedestrian accommodations on I-74 bridges.** This variation would not provide a new bicycle/pedestrian trail crossing at the Mississippi River.
- **New bicycle/pedestrian trail on existing Iowa-bound bridge.** As discussed in [Section 2.2.5, *Non-Roadway Alternatives*](#), this option would retain the existing Iowa-bound bridge for continued use as a bicycle/pedestrian trail upon abandonment of the bridges for I-74 traffic. The existing bridge would be retrofitted to safely accommodate use by bicyclists and pedestrians. New trail connections would be provided on the Iowa and Illinois river approaches to connect the bridge with adjacent riverfront trail systems. The trail connections and bridge would be designed in compliance with ADA requirements. This variation is viable only if there is a commitment from a local agency to assume jurisdiction, future liability, and financial responsibility for the bridge. Involved local agencies (Scott County, Rock Island County, Moline, and Bettendorf) indicated that they are not interested in assuming future responsibility for the existing bridge due to a combination of high capital and operation/maintenance costs, as well as concerns that retention of the bridge would constrain design options for the new I-74 bridge.
- **New bicycle/pedestrian trail on new I-74 bridge.** This variation would provide a new bicycle/pedestrian trail crossing along the new I-74 Mississippi River bridge. The trail would be physically separated from I-74 traffic, and new trail connections would be

provided on the Iowa and Illinois river approaches to connect users with adjacent riverfront trail systems. The trail connections and bridge crossing would be designed in compliance with ADA requirements. This variation would require a commitment from the FHWA, the Iowa DOT, and the Illinois DOT for incremental costs (construction and operating/maintenance costs) associated with the new trail accommodations, and may require local participation for trail construction, operations, or maintenance. Local agencies have voiced their support for trail accommodations along the new I-74 Mississippi River crossing.

North Section (Lincoln Road to 53rd Street). The proposed alternative includes reconstructing and widening I-74 to accommodate three 12-foot through lanes in each direction through U.S. 6 (Spruce Hills Drive), and reconstructing I-74 in-kind to accommodate two 12-foot lanes in each direction between U.S. 6 and 53rd Street. In addition, 12-foot auxiliary lanes would be provided between Grant Street and U.S. 6 (NB I-74). Based on current design standards, an approximately 30-foot-wide paved barrier median would be provided to separate opposing traffic through U.S. 6. Between U.S. 6 and 53rd Street, the existing 50-foot median would be retained; the proposed median type (i.e., paved versus grass) and treatment (i.e., barrier wall versus guardrail) would be determined with subsequent engineering studies. The proposed widening would be accomplished within the existing median in order to minimize impacts to adjacent land uses. Although mainline widening is not proposed at this time north of U.S. 6, additional lanes could be constructed within the existing median if required at a future date. It should be noted that the proposed roadway width reflects current design standards and could be revised in the future. The typical cross sections for the proposed alternative are shown on [Figure 2-3, Typical Proposed Cross Section](#), at the end of Section 2. The proposed alternative in the North Section is shown in [Appendix A, Build Alternatives Exhibit](#) (Sheets 19 through 28).

The existing horizontal and vertical alignment of I-74 would generally be maintained in the Iowa Section, with the exception of minor adjustments to the horizontal alignment north of Middle Road near Duck Creek to improve motorist sight distance and to meet current design standards.

Existing mainline and overhead structures would be improved to meet design criteria, accommodate the proposed roadway widening, and to provide acceptable vertical and lateral clearances. All existing mainline structures would be either reconstructed or repaired and widened as necessary to accommodate the proposed roadway improvements. This includes I-74 bridges over Middle Road, Duck Creek, and U.S. 6 (Spruce Hills Drive). Additionally, the 53rd Street over I-74 bridge would be reconstructed and widened to accommodate the proposed design improvements.

The proposed alternative can be accommodated within existing right-of-way along the North Section. Where appropriate, retaining walls would be constructed to avoid property impacts.

Multiple interchange variations remain under consideration in the North Section. A description of the design variations follows.

Interchange Variations. The existing Middle Road, U.S. 6 (Spruce Hills Drive), and 53rd Street interchanges would be improved to accommodate current and projected traffic demand, to improve safety features, and to comply with current design standards. At the Middle Road interchange, minor design improvements are proposed at entrance and exit ramp terminals

and at the ramp intersections along Middle Road. Two interchange design variations remain under consideration at U.S. 6 and at 53rd Street. These variations reflect design characteristics of the interchange options recommended for further consideration with earlier analyses (see [Section 2.2.4, Interchange Options](#)). For ease of reference, interchange variations at 53rd Street were renumbered following the evaluation of interchange options. Interchange variations are summarized in [Table 2-4, Proposed Interchange Improvements](#), at the end of Section 2, and are briefly described below.

U.S. 6 (Spruce Hills Drive). Variation 1 maintains the existing interchange ramp design with improvements at the entrance and exit ramp terminals and at the ramp intersections along U.S. 6. Variation 2 shifts the existing NB exit and northbound entrance ramps and the associated U.S. 6 ramp terminal intersection to the west from its present location, and includes improvements to entrance and exit ramp terminals along I-74.

Traffic analyses reveal that both interchange variations would operate at an acceptable LOS. However, Variation 2 increases the spacing between the NB ramp terminal intersection and the adjacent Utica Ridge Road intersection, resulting in better traffic flow along U.S. 6.

53rd Street. Variation 1 provides an improved partial cloverleaf type A-B interchange with loop ramps in the northeast and northwest quadrants. Variation 2 provides an improved partial cloverleaf type A interchange with loop ramps in the northwest and southeast quadrants.

Traffic analyses reveal that both interchange variations would operate at an acceptable LOS. However, Variation 2 best complements traffic patterns in the area by providing free-flow traffic operations for the two heaviest interchange movements (NB to WB and WB to SB).

2.4 Evaluation of Proposed Alternatives

This section includes a general evaluation of the build alternatives, in particular focusing on the project objectives established with the purpose and need. A more detailed comparative evaluation of the alignment alternatives (Alignments E and F), interchange design variations, and local roadway design variations for the Central Section is included in [Section 4, Environmental Consequences](#). Findings of the alternatives evaluation are as follows:

- **Traffic demand and service.** The build alternatives would reduce congestion and improve traffic operations in the corridor. Build alternatives provide additional through lanes and auxiliary lanes along I-74, improve connections to major local roadways, improve interchange design features, and provide traffic operational improvements on connecting local roadways. The build alternatives would appreciably reduce congestion along the functionally obsolete Mississippi River crossing, where the current lack of adequate capacity causes congested travel conditions during peak travel periods.
- **Roadway geometry.** The build alternatives would correct I-74 geometry issues, including narrow roadway width, reverse curves, maximum vertical grades, close interchange spacing, and short taper rates on ramps. Build alternatives include improvements to the horizontal curves and vertical grades along I-74, provide shoulders throughout the corridor including along the Mississippi River crossing, provide greater spacing between successive interchange ramps, and provide improved ramp

acceleration and deceleration tapers. The design features of the build alternatives comply with current interstate design standards.

- **Safety considerations.** The build alternatives would appreciably improve safety performance along I-74. As cited in [Section 1, *Purpose of and Need for Action*](#), a combination of design features and traffic congestion contribute to high crash rates between Middle Road in Iowa and 12th Avenue in Illinois. Build alternatives would provide updated interstate design features, including full width travel lanes and shoulders, additional through lanes and auxiliary lanes, improved horizontal and vertical alignments, and improved interchange acceleration and deceleration tapers. These improvements are expected to improve the overall I-74 safety performance.
- **Dependability of travel.** Build alternatives would improve travel dependability in the corridor. Current unreliable travel conditions are attributable to a combination of inadequate roadway capacity, the narrow roadway width of the Mississippi River crossing, the current roadway geometry, and inadequate connections to the local roadway system. Build alternatives would improve travel reliability by providing additional capacity particularly at the Mississippi River crossing, improved interstate design features, and improved connections to the local roadway system.
- **Transportation connections.** Build alternatives would enhance transportation service along the I-74 corridor. This corridor functions as a critical element in the regional transportation system, providing connections between Iowa and Illinois communities and to other modes of travel for both freight and people. Proposed improvements would provide efficient and reliable travel between Iowa and Illinois communities, and would improve connections to major local roadways via improved interchange locations and design features. Additionally, build alternatives would provide opportunities for improved connections for other travel modes, including bus transit and bicycle/pedestrian accommodations.
- **Infrastructure condition.** The build alternatives would improve the physical conditions along I-74. Build alternatives would include removal and reconstruction of deteriorating roadway pavement and bridges, eliminating the need for frequent repairs and maintenance improvements along an aging facility.
- **Economic development.** Build alternatives provide the improved highway infrastructure needed to sustain local economic development initiatives. Proposed design and capacity improvements would support current and projected travel needs in the corridor, improving circulation through the heart of the Quad Cities region. These improvements provide enhanced transportation connections for commuters to potential new employment centers, as well as enhanced transportation service to the planned riverfront redevelopment areas along the Mississippi River. Build alternatives can be implemented while maintaining two traffic lanes in each direction along I-74, even during construction, thus ensuring adequate access to the economically important Bettendorf and Moline riverfront areas.

2.5 Preferred Alternative

After public and agency comments on the Draft EIS and the public hearing have been fully evaluated, the preferred alternative will be identified and discussed in the Final EIS. A decision regarding the recommended alternative will be made in the Record of Decision.